ACCIDENT INVESTIGATIONS HANDBOOK

JUNE 1998

U.S. ARMY SAFETY CENTER

This Accident Investigation Handbook was updated June 10, 1998, and supersedes the Accident Investigator Handbook dated January 1994 with change 1.

THIS BOOK MAY BE USED AS A GUIDE FOR UNITS IN THE FIELD BUT IS NOT MEANT TO BE ALL ENCOMPASSING NOR IS IT MENT TO SUPERSEED ANY REGULATIONS OR LOCAL SOPs!

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INTRODUCTION

A. PURPOSE: To provide a concise, standardized set of instructions and procedures for use by the U.S. Army Safety Center (USASC) Accident Investigation Teams.

B. APPLICABILITY: The booklet is intended for use by USASC Accident Investigation boards. It may also be utilized as a guide for field accident investigators who are appointed by their local command.

It is designed to be taken to the investigation site and used as a guide and data recording tool. The intent is that the "workbook" sections/checklists be taken apart and used by the appropriate investigation sub-group for completion. When the questions are answered and forms are completed, the data will be available to complete the report.

Contents of this booklet are intended for both aviation and ground accidents. Unless otherwise stated, information pertains to either type accident. Where necessary, differences have been delineated.

POCs, U.S. Army Safety Center:

Investigation Division POC for investigation process is Chief, Investigations Division, DSN 558-3410/2660, Commercial (334) 255-3410/2660.

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CHAPTER 1

ACCIDENT INVESTIGATION TEAM DEPLOYMENT

1-1. PRE-DEPLOYMENT

a. GENERAL. The time sensitive nature of the accident investigation process mandates the rapid deployment of accident investigation teams. The success and efficiency of a deployment depends upon the individual situation and compliance with the following procedures.

b. RESPONSIBILITIES.

(1) The Chiefs of Aviation and Ground Systems and Investigations are responsible for determining what accidents are investigated by the USASC and will ensure that a board president is available for deployment within 2 hours.

(2) the Chief of Aviation Systems and Investigation will provide board recorders for all aviation accidents and any ground accident for which a ground recorder is not available. Will also provide a listing of recorders for deployment to Operations.

(3) USASC Flight Surgeon is responsible to ensure all potential accident investigators are properly vaccinated for world wide deployment.

(4) The Board President. 'Has the primary responsibility of ensuring that the requirements of this chapter have been accomplished prior to deployment.

(5) Operations Officer. Responsible for timely notification to appropriate Chief of Air or Ground Systems and Investigation of any Class A, B or significant accidents. He is also responsible for informing individual team members of their duties and responsibilities associated with the teams accident.

(6) All Investigation Team Members.

(a) 'Will comply with the deployment time requirements of chapter 3 (1)(d) and (e) of the Operations Directorate SOP.

(b) Maintain deployment bags to ensure their ability to meet deployment times.

(c) Ensure that individual vaccinations are current in the event of overseas deployment. The vaccinations should

include those for possible deployment to middle East, Far East, and South American areas.

(d) Ensure that any change to the investigators deployment status is coordinated to operations personnel in a timely manner so that replacement personnel can be properly identified for deployment.

c. TEAM STANDBY. As a minimum there will be a first-up and second-up team at all times. Standby is normally seven days in duration and changes every Wednesday at 0730. At that time first-up team members move to the lowest priority deployment status. All other teams move to the next higher deployment status, (second-up to first, third-up to second, etc.).

(1) First-Up Team Members. Must be prepared to deploy two hours after notification. Responsible for ensuring that they can be reached by telephone or beeper. Will not travel more than two hours from the Ft. Rucker area without the approval of the appropriate System and Investigation Chief. The appropriate individual/chief will notify operations of the adjusted response time.

(2) Second-Up Team Members. Must be prepared to deploy four hours after notification. Responsible for ensuring that they can be reached by telephone or beeper. Team members departing the local beeper service area will leave a telephone contact number with operations personnel or the USASC SDO/SDNCO. Team members should not travel more than two hours driving time from the Safety Center without notifying the Operations Officer, his designated representative, or the USASC Duty Officer/NCO.

(3) Other Team Members. Will inform the chain of command or operations personnel of any significant changes in their normal duty/off-duty status, (to ensure that they can be contacted for changes in their deployment status).

1-2. NOTIFICATION AND DEPLOYMENT

a. OPERATIONS PERSONNEL ACTIONS.

(1) Operations will be notified of an accident directly from the field during duty hours, or by the SDO/SDNCO after duty hours. This initial information is to be recorded on DA Form 7305-R or DA Form 7306-R as appropriate.

(2) The Operations Officer or his representative will contact the Chief of Aviation or Ground Systems and

Investigations as appropriate for deployment decision. The Chief will contact the Director for Operations, with their deployment recommendations. The Chief then notifies operations of their decision and the names of the board president if deployed.

(3) The Operations Officer or his designated representative will:

(a) Notify the accident POC of the decision to support the accident investigation with the deployment of a team from the Safety Center.

(b) FAX or verbally communicate the board support requirements listed in the POC Checklist, (Appendix C), and be prepared to answer any questions regarding the assignment and qualification requirements for local board members.

(c) Gather information on the environmental conditions at the accident site (in order to properly prepare the investigation team and schedule any special equipment to be issued upon the teams arrival).

(4) Concurrently, operations personnel will alert the First-Up Team. Every attempt should be made to provide as complete an initial brief as possible to ensure that team members depart their quarters with the required uniforms and equipment. Normally, two hours is allocated for team preparation after they have been notified.

(5) Operations personnel will coordinate the team's departure requirements, (means of transportation, itinerary, orders, etc). NOTE: Special attention must be paid to non-standard requirements such as security clearance memorandums, visa and foreign clearance guide coordination.

(6) If time is available, operations will pull all available data from the database which corresponds to the unit, aircraft, similar accidents, and pilots and provide to the board president prior to departure.

b. BOARD MEMBER ACTIONS.

(1) When alerted of their impending deployment, team members will secure their deployment bags and prepare for whatever mode of deployment is specified.

(2) At a minimum, the Board President or Recorder will proceed to the Safety Center to be briefed by Operations and to pick up the investigation deployment package.

(3) The Board President will ensure the team is briefed in accordance with Appendix D.

(4) The Board President has the option of contacting the other board members, (including those not located at Ft. Rucker), the accident POC and or personnel at the accident site.

(5) The Board President or Recorder will obtain a final briefing from USASC operations which may include command guidance or specific instructions.

(6) Any additional information or updates will be disseminated by the Board President or his designee to the other board members.

a. As required, each team member or a designated team representative will return to Operations to pick up appropriate equipment and documents. (See Appendix E).

1-3. Field Responsibilities.

a. The Board President is responsible for the management, administration, supervision, and coordination of the entire investigative effort. The Board President will ensure that the team members are provided the necessary personnel/equipment to complete the investigation. Some of the Board President's tasks are as follows:

(1) Conduct Initial Board Briefing per checklist provided at Appendix F.

(2) Coordinate with the site point of contact (POC) for administrative support as required (Appendix C, POC Checklist).

(3) Provide courtesy inbrief to battalion/brigade commander as appropriate (chapter 2, para 2).

(4) Arrange for local transportation and billeting.

(5) Complete para 1, History of Flight, for aviation accidents or Sequence of Events for ground accidents and para 4, Analysis of the Narrative. In addition, write findings and recommendations,
analysis, and the command paragraph of the narrative in conjunction with data obtained from the deliberation phase.

(6) Coordinate, prepare, and present the outbrief.

(7) Daily Updates. The board president is required to contact USASC Operations on a daily basis and update the accident data, to include correcting the accident synopsis originally provided per telephonic notification (DA Form 7305/6-R). The following areas are further defined in order to update the USASC:

NOTE: The local chain of command is not provided with updates on the investigation. The exception is when serious safety issues or materiel defects are identified which require immediate, local, corrective measures to prevent a future accident.

(a) What has been accomplished
(1) Investigation status
(a) Crash site analysis
(b) Photographs taken and the transmission of appropriate digital photographs.
(c) Crash site diagram completion
(d) Witness interviews
(e) Equipment records review
(f) Personnel records review
(2) Administrative status
(a) Quarters location/telephone numbers
(b) Working area/telephone numbers
(c) Briefing of commanders
(d) Contact with collateral investigation board president

b. Board Recorder. The board Recorder must ensure that all substantiating data, photos, completed drafts, and required report information are in his possession prior to completion of the investigation. Any discrepancies will be brought to the attention of the Board President. The Recorder will also assume the following duties, in addition to those normally performed as a member of the human factors or materiel factors work groups:

1. Assist other team members as necessary.

2. Assign responsibility for all required forms.

3. Ensure all substantiating data is obtained to include weather reports, copies of appropriate regulations, policies, references, etc.

4. Ensure all witness data is completed and accurate.

5. Before leaving the field site, ensure the entire report is completed in "draft form" to the fullest extent possible, to include Names, Signatures, SSNs, Grades, Branches, Addresses, and Telephone Numbers on DA Form 2397-14-R.

6. Upon return to the USASC, the Recorder will be responsible for submitting the report in draft form and required material to Report Processing Section (RPS) within 10 working days for processing.

c. BOARD MEMBERS DUTIES. Based upon guidance from the Board Recorder, the remaining board members will be assigned to work groups for human factors and materiel factors.

1. Human Factors. The group for this area will complete items in paragraph 2, Human Factors (HF) Investigation, of the Narrative (see Appendices J, I and K). The HF group will normally have the flight surgeon/medical doctor, IP or senior trainer, and other appropriate HF-oriented personnel in the group. Specific duties of the HF's group include, but are not limited to:

(a) Obtain/review training records, performance records, medical records, mental health records (as appropriate), personnel records, and other background information on personnel involved in the accident.
(b) Check on the status of alcohol/urinalysis testing.
(c) Review protective/escape/survival/rescue data.
(d) Analyze any effects of weather on the accident.
(e) Review unit SOP/appropriate regulations.
(f) Determine if injuries or results of the autopsy might give additional information to the investigative process.
(g) Review training of individual(s) involved in an accident and make appropriate recommendations. Particular attention should be given to NVD/NVS system training.

2. Materiel Factors. The group for this area will complete items in paragraph 3, Materiel Factors (MF), of the Narrative IAW DA Pam 385-40 and Appendices J. The MF group would normally have maintenance personnel and/or technical advisors in the group. Specific duties of the MF's group include, but are not limited to:

(a) Review and evaluate maintenance records, SOPs, maintenance procedures, and quality control.
(b) Evaluation of maintenance/materiel data, to include the effects of fire. A format is provided at Appendix J when a certificate of damage and disposition certification are required.
(c) Completion of the wreckage diagram or accident site diagram (See Appendix R).
(d) Other maintenance/flight data associated with the DA 2397 series/DA Form 285 forms.
(e) Follow-on maintenance evaluations with the Corpus Christi Army Depot (CCAD) or other Army Materiel Command (AMC) agencies.

(f) Coordinate for local help as necessary, (i.e., Aviation and Missile Command (AMCOM)/Tank and Automotive Command (TACOM) representative, LARs, etc.).

(g) Monitor wreckage recovery to note additional damage sustained during recovery.

(h) Take and submit aircraft/vehicle fluid samples for laboratory analysis and follow-up to obtain results.

(i) Assist and monitor the packaging and shipment of components for teardown analysis to ensure proper packing and required documentation.

(j) Assign a USASC control number to log and monitor shipment of components (to CCAD, Natick Laboratories, or manufacturer) for teardown analysis.

CHAPTER 2 - FIELD INVESTIGATION

SECTION I - GENERAL

The field phase of the investigation encompasses all proceedings from the deployment of the team through the command out-brief. The primary reference for accomplishment of the investigation is DA Pam 385-40.

SECTION II - INITIAL ARRIVAL

1. Establish contact with the unit/installation point of contact (POC). This person is responsible for providing everyday assistance in making the administrative details as simple as possible. The unit POC must be dedicated to the board to ensure liaison between the unit and the accident board to facilitate the retrieval of information from the unit. The items which should be discussed with this individual are outlined in the Point of Contact Checklist, Appendix C. The checklists should be used to ensure that all administrative requirements are accomplished upon arrival. The POC will assist in obtaining all records and documentation required by the board.

2. Conduct or schedule an in-brief to the local brigade and or battalion commander. Reinforce that this board is not for initiating or supporting pecuniary measures.

3. Assemble all board members, ensure qualifications, organize and brief them on the Board's mission, each board member's responsibilities, and how the investigation will be conducted IAW Appendix F. If additional board members from outside the supporting installation are required (e.g., parachute accidents, AMCOM representatives, or others), notify USASC Operations.

4. Move to the accident site. Generally, the first order of business should be to ensure the board is properly qualified, briefed, and organized before departing for the accident scene. However, extenuating circumstances may dictate that available board members go directly to the scene. The circumstances might include impending weather, non-availability of all board members, civil authority requests to clean up the accident scene, or hazardous site conditions which dictate wreckage removal.

SECTION III - FORMS

1. AVIATION ACCIDENTS - 2397 SERIES FORMS.

Responsibility for obtaining information and completing the various forms should be assigned by the president at the initial board meeting. Assignments should be made with consideration of which work group will have the particular information required. A description of forms is listed below:

a. CLASS A OR B ACCIDENT REPORT (Right Side)

DA FORM	DESCRIPTION	TAB
3497-14-R	Index B	N/A
2397-R	Statement of Reviewing Officials	A
2397-1-R	Summary Mishap	B
2397-2-R	Findings/Recommendations	C
2397-3-R	Accident Narrative	D
2397-4-R	Summary of Witness Interviews	E
2397-5-R	Wreckage Distribution Data	F
2397-6-R	Impact/Crash Damage Data	G
2397-7-R	Maintenance/Materiel Data	H
2397-8-R	Personal Data	I
2397-9-R	Injury/Occupational Injury Data	J
2397-10-R	Escape/Survival/Rescue Data	K
2397-11-R	Weather Data	L
2397-12-R	Fire Data	M

b. CLASS A OR B ACCIDENT REPORT (Left Side)

TITLE	TAB
Index A (DA FORM 2397-13R)	N/A
Board Orders	1
Weather Reports	2
Certificate of Damage/ECOD	3
Photos, Maps, Diagrams	4
Copy of Deficiency Reports EIR/QDR Information	5
Laboratory Analysis	6
Weight and Balance	7
Directives, Regulations, etc.	8
Autopsy Report (DD Form 1322)	9
Flight Planning Data	10
Aviators Flight Record (2408-12)	11
Equipment Inspection & Maintenance Record	12
Uncorrected Fault Record (DA Form 2408-14)	13
Equipment Modification Record	14

Additional Information	15
Additional Information	16

2. GROUND ACCIDENTS - DA FORM 285-R SERIES. Responsibility for obtaining information and completing the various forms of the series should be assigned commensurate with aviation accident investigations.

a. CLASS A or B ACCIDENT REPORT (Right Side)

DA FORM	DESCRIPTION	TAB
285-B-R	Index B	N/A
285-O-R	Statement of Reviewing Officer	A
285	Accident Report	B
N/A	Findings and Recommendations	C
N/A	Narrative	D
285-W-R	Witness Interviews	E

b. CLASS A or B ACCIDENT REPORT (Left Side)

DA FORM	DESCRIPTION	TAB
285-A-R	Index A	N/A
N/A	SIR/Casualty Report	1
N/A	Board Orders	2
N/A	Map	3
N/A	Diagram/Photos	4
N/A	ECOD	5
N/A	Deficiency Reports	6
N/A	Directives/Regulations	7
N/A	Technical and Laboratory Reports	8
5987-E	Uncorrected Fault Record	9
2408-5	Modification Record	10
N/A	Weather Data	11
N/A	Medical Data	12
	Other	13
	Other	14

DA Forms 285-A-R and -B-R should be used to track form completion and as a log to ensure that all required data is captured prior to departure from the field site.

c. CLASS C AND COMBAT CLASS A AND B ACCIDENTS. To report these accidents, DA Form 285-AB-R is used in lieu of DA Form 285.

1. GENERAL.

Data collection is a collective effort on behalf of all members of the board, as directed by the Board President, and may occur as a simultaneous effort by the various work groups. It provides the factual information used to complete the appropriate forms and records. It also provides the general and detailed knowledge used later during the deliberation phase. Means of data collection are detailed in the following subparagraphs.

2. WITNESS INTERVIEW PROCEDURES.

a. It is generally best to begin the investigation by interviewing surviving crewmembers and eyewitnesses. They are usually your best source of information in determining the accident sequence. It is important to interview witnesses as soon as possible. If there are no eyewitnesses, then as much factual information about the accident as is available should be assembled and briefed to the board just prior to going to the accident site. The person most knowledgeable of the mission, personnel involved, and any other accident elements should be at the accident site if there are no witnesses available. Before attempting to conduct interviews, get organized to minimize your interruptions.

Before you begin to brief or interview a witness, obtain and complete the “header sheet” information on that individual, even if the interview information may not be used in the final report. The header information gives name, unit, address, and most importantly, a telephone number, should you need to contact that individual again.

b. The initial interview should be conducted in a quiet, comfortable location and should be taped (prior witness permission is required). The statement, "This interview is being taped," should precede any questions and be on the tape. If possible, the entire accident board should be present during the initial interview of key witnesses. In some instances, the witness may have to be taken to the accident site after the initial interview for clarification of his/her statement. Witness interview considerations are as follows:

(1) Place the witness at ease. The individual's good will is a distinct asset.

(2) Explain the purpose of the investigation, the value of the statement, and the confidentiality promise if appropriate.

(3) Read the witness' written statement provide to either the CID or the unit safety officer prior to the interview. Use it to formulate questions or verify his credibility.

(4) Explain that you will be recording his statement unless he objects.

(5) Only one investigator should ask questions at a time.

(6) Do not embarrass a witness by reacting to obvious errors.

(7) Do not show impatience.

(8) Do not lecture the witness on correct procedures or requirements.

(9) Avoid collective interviews (interviewing more than one witness at a time).

(10) Have a mental outline for areas of questioning.

(11) Permit witness to tell the story in his/her own words (do not interrupt).

(12) Keep on the subject and avoid leading questions.

(13) Do not insist on a yes/no answer.

(14) Ask one question at a time.

(15) Do not assist witness in answering questions.

(16) Avoid revealing to witness items discovered during investigation.

(17) Be unobtrusive in taking notes.

(18) Interview; do not interrogate.

(19) Remember: Be friendly. The witness does not even have to talk with you.

(20) Respect the emotional state of the witness.

(21) Listen to the questions asked and the responses given. Avoid repeating questions except for clarity.

(22) Avoid asking a series of questions on a narrow focus. The witness may give an answer he feels is “expected.”

(23) Do not take a witness’ statement for absolute truth, particularly those most directly involved in an accident. The closer someone is to the blame line the more tendency there will be to protect oneself from blame and to fill in the memory blanks with logical, usually the text book response for an action. Everyone has his own version of the “truth.” Always try to substantiate statements with other means.

Normally, the interview will begin by asking the witness' name, duty position, and location during the accident. Then ask the witness to tell everything that he remembers about the accident. Other questions may include items from history of flight/events, human factors, or materiel factors checklists. Usually, it is advantageous to move from general to specific questions. Also, get his opinion on what caused the accident.

The board must be careful not to believe a witness based solely on his interview. Substantiate or refute his information with other sources.

3. FORMS FOR WITNESS DATA.

a. DA Form 2397-4-R or DA Form 285-W-R, Summary of Witness Interview, is used by aviation or ground accident investigation boards, respectively, to summarize statements which are necessary and used to substantiate the accident report.

b. Procedural Guidelines. Procedural guidelines for completion of DA Form 2397-4-R or DA Form 285-W-R are delineated in DA PAM 385-40.

4. ACCIDENT SCENE DATA COLLECTION.

It is imperative that all members of the Board view the accident site as soon as possible after being briefed in order to have a general mental picture of what occurred. If the time of day will not permit at least one hour of daylight at the site, then it may be advisable to wait until the next morning.

5. PHOTOGRAPHICS.

a. The Board Recorder has the responsibility for ensuring that all necessary photographs are taken. Print or digital format is preferred. If an installation photographer is provided, they should be supervised by the board member in charge of photography. Remember: It is always better to have too many

photos than not enough. Select, from all photographs, those needed to substantiate the report.

b. A photographic checklist is shown below:

PHOTOS NEEDED	GROUND	AIR
Aerial view from four directions (N, S, E, W)	X	X
Ground view from four directions (N, S, E, W)	X	X
General overview of wreckage beginning at nose and circling with a photo every 45^0	X	X
Photos of any ground scars	X	X
Photos of major components/ controls/parts	X	X
Instrument panel and consoles	X	X
Cockpit/cabin/cab areas (include) seats/restraining systems)	X	X
Canopy/ejection seat	N/A	X
Detailed photos of suspected failed parts	X	X
Other photos deemed necessary	X	X

NOTE: X (required)

SECTION V - NARRATIVE DATA

1. For ground accidents, the narrative outline is at Appendix G.

2. For aviation accidents, the narrative outline is at Appendix H.

CHAPTER 3 - DATA ANALYSIS

SECTION I - GENERAL

At some point during the investigation, the data collection phase will be completed. At this point, no remaining sources of information are deemed available or expected. The requirement now is to analyze the data and to structure the results into a format that clearly shows the inter-relationship between the cause-related errors/failures and the system inadequacies which caused or permitted them to occur. The method used for to conduct this analysis is termed as the deliberations of the board with all board members present.

SECTION II - DELIBERATIONS

1. ACTIONS BY BOARD PRESIDENT PRIOR TO DELIBERATIONS. The Board President will brief the board members prior to convening deliberations to facilitate more efficient proceedings. The deliberations will be attended by all appointed board members. (NOTE: Advisors are not considered voting board members.) If approved by the Board President, other individuals, such as the installation/unit safety POC or technical advisors, may attend the proceedings. The Board President is responsible for the supervision of deliberations and, as a minimum, should address the following areas prior to initiating the deliberation process:

a. Methods of Deliberations (see 2. below).
b. Categories of Findings (DA Pam 385-40 for both aviation/ground accidents).
c. Guidelines for categorizing specific deficiencies (DA Pam 385-40, par. 2-8(g), for both air and ground accidents).
d. Submission of a completed report.
e. Disposition of completed report.
f. Role of the board members at the command outbrief.

2. DELIBERATION PROCESS.

a. There are several methods to effectively conduct deliberations; however, it is of utmost importance to impress on each board member that every abnormality, regardless of perceived individual importance, be brought to the attention of the entire board during deliberations. The following is the method that is suggested for use. It ensures that all deficiencies are addressed, provides graphic exposure of timing, produces a written record of the deliberations, and provides a framework to write the Analysis paragraph, which is the documentation of the deliberations.

b. First, determine all abnormalities discovered during the data gathering process by going through a process in which the individual areas are written on a chalkboard or butcher chart and abnormalities in each area are listed. A listing of individual areas is provided below to aid the board in identifying abnormalities/discrepancies.

(1) History (Air/Ground)
- Medical problems
- Personnel records (discrepancies)
- Review flight records (air only)
- Review driving records (discrepancies with DA Form 348, training records, and SF 46)
- Review unit driver's training program for adequacy in training in the tasks required for licensing. (towing, NVG, etc.)
- Was the mission approved
- Was there adequate mission notification (preparation)
- Was the pilot/crew/driver qualified?
- Look at pilot/crew/driver rest
- Equipment condition/maintenance trends
- SOP adequacy
- Accident experience of aircrew/driver
- Were risk management procedures applied and adequate?(hazards identified and controls in place, controls followed?)

(2) Pre-mission accomplishments

(a) Aviation accidents
- Aircraft inspection by crew
- Aircraft condition
- Crew preplanning and coordination
- Perceived urgency of mission
- Weather briefing
- Mission requirements
- Flight plan
- Run-up procedures
- SOP followed

(b) Ground accidents
- PMCS completed properly
- Vehicle dispatched properly
- Operations order complete (if applicable). Did it include safety imbedded or as a separate paragraph?
- SOP followed
- Other discrepancies

(3) Mission/Flight

(a) Aircraft accidents

- Compliance with mission requirements
- Mission conducted as planned
- Materiel/maintenance problems
- ATC support
- Weather conditions
- Regulations/SOP adherence
- Logistical support
- Aircrew Training Manual
- Terrain
- Environment
- NVS/NVD
- Crew coordination

(b) Ground accidents

- Mission conducted as planned
- Materiel/maintenance problems
- Logistical support
- Weather conditions
- Soldiers Manual for task/condition/standard
- Regulations/SOPs adherence
- NVS/NVD
- Crew coordination

(4) Postmission/postflight

- Egress problems/seat belts or rollover protection system (ROPS)
- Compromise, penetration, and reduction of occupiable space.
- Rescue timely or any problems
- Pre-accident plan
- Security of accident site.

During this phase of the deliberations, do not just try to determine cause factors; list all the problems/abnormalities noted during the data gathering process.

After ensuring that all abnormalities and problems have been listed, go to an event chart to determine actual cause factors. Start with the accident and go back in time and list the events leading up to the mishap. When determining if a factor is contributing or non-contributing, remove the event. Would the accident have still occurred? If yes then it was not contributing. If No, then it may be a contributing factor.

b. After completion of the event chart, one should be able to write the findings that were contributory to the accident from

what is listed. When all of the events have been listed on the chart, go back to your original list and cross out those things that are now on the event chart. The remaining abnormalities will either be present but not contributing factors, comments in the Analysis, or discarded as insignificant items. The Board should discuss each of the abnormalities and, based on this discussion, determine the category in which they belong. For each cause or abnormality, a task error/material failure/environmental condition, system inadequacy(ies) and remedial measure(s) will be developed. See Appendix T of the Handbook and DA Pam 385-40 for the proper structuring of a finding.

c. For many human error findings, the cause of the error can be attributed to a failure to establish, train, enforce, or follow standards, the premise being that safe performance is a predictable result of performing to standard, and performing to standard is a result of training to standard (see Appendix I).

Look at the risk management process to determine where the system broke down: Were all the obvious hazards identified? Were appropriate controls in place to reduce the hazards? Were these controls used or ignored? Was the risk level appropriate and approved at the appropriate level? Was risk management practiced at all levels (i.e., LT, SGT, etc.), or only initially completed by a senior leader? When the mission was deviated from, were subordinate leaders conducting risk management?

d. After completion of the deliberations, the Board President will formulate the draft history, findings, and recommendations. This is submitted to the USASC for staffing, which should occur within 24 hours of receipt. Staffing should be accomplished via means of telephonic conference capability. Prior to the command outbrief, the board should convene again to review and be afforded the opportunity to comment on the results of the staffing.

e. Board members should be advised that, if they are not in agreement with the board's findings, they may submit a minority report to the board president which will be included in the final report. (See DA Pam 385-40, para 2-1b.)

SECTION III - ANALYSIS

1. GENERAL.

a. The analysis of the accident is the board's consideration of **WHY** things happened. It should consider all facts in the

narrative of the DA Form 2397 or 285 series, but should not restate the elements of the narrative. It should be reflective in determining the “why” concept of the accident in terms of task errors, materiel failures/malfunctions, or environmental factors.

b. The analysis should start out with the standard statement of human, materiel, environmental considerations. Factors concluded as noncontributing to the accident should be addressed first and discounted as causes. Human factors or materiel factors paragraphs should not be formulated so as to draw conclusions; nor should contain expletives such as adjectives or adverbs to describe and thus render opinion into pertinent facts. Keep it simple. If the particular system or factors were not involved, say it simply.

GUIDANCE FOR WRITING ANALYSIS.

As a guideline in writing the analysis section, Appendix J should be reviewed in addition to DA PAM 385-40.

CHAPTER 4 - POST INVESTIGATION ACTIONS

SECTION I - COMMAND OUTBRIEF

1. GENERAL.

a. After deliberations, the Board President will provide the USASC with a copy of the accident History, Analysis, and Findings and Recommendations for staffing prior to the command outbrief.

b. Upon completion of the staffing with USASC, the Board President will be required to conduct a command out-brief to the GCMA, normally the Division or Corps Commander. As directed by the GCMA, Brigade, Group, Regiment, Battalion, and sometimes the Company Commanders are invited. This brief is not for the general public or other unit personnel not in the chain of command or in the safety business. NO STRAP-HANGERS! It is considered common courtesy to pre-brief to the Brigade and Battalion commanders, particularly when command-related or controversial findings are to be presented. The format for this briefing is contained in Appendix K.

c. After the Board President has written the briefing, he should brief board members on what will be said at the out-brief to resolve any problems and suggest changes to the brief as necessary. The board members will be present to provide technical support to the board president.

d. The Board Recorder will document for future reference the names and duty positions of personnel briefed at each briefing conducted, as well as any questions and comments, to include respective board responses.

e. Due to the sensitive nature of the information presented and expected changes to the final report, copies of the outbrief are not normally left with the command. At the request of the GCMA, a copy may be left with the installation safety director and should be labeled “For accident prevention purposes only. This briefing is not for distribution.”

SECTION II - ACTIONS OF BOARD AFTER RETURN TO USASC

1. GENERAL. On return to USASC, the Investigation Board has a limited time to accomplish an in-brief and turn in a draft of the accident report (see Appendix L) to the Accident Report Processing Branch (ARPB). The time schedule starts with the first duty day following the board's return.

-- Upon return to USASC, the Board President will contact CAI PC personnel to schedule an inbrief. The inbrief will be conducted within three (3) duty days of return, pending availability of the appropriate briefing facilities and the CG's calendar.

-- Within 5 duty days of the in-brief the Board President will submit a draft "Preliminary Report" to ARPB for processing.

-- Within 10 duty days, the Board Recorder will submit a draft of the accident report itself to ARPB for processing.

2. PRELIMINARY REPORT (Appendix L). The purpose of the Preliminary Report is to provide the USASC with a quick overview of the accident on a preliminary basis. Drafts will be presented on computer disk. Material required for the Preliminary Report includes:

-- A set of selected photos with appropriate captions.

-- Accident Executive Summary sheet.

-- Findings and Recommendations as briefed to the field commanders.

-- Out-brief attendees and command feedback.

3. IN-BRIEFING. Upon their return from the investigation, the Board will in-brief USASC staff. The purpose of this brief is to ensure the different USASC staff offices are aware of the issues and findings. All staff agencies should be represented.

4. ACCIDENT REPORT. The completed accident report will contain:

a. Aviation accident reports. This report will be formatted IAW guidance in DA Pam 385-40 and Chapter 2 of this handbook.

(1) Left side. The left side of the report is reserved for factual information and any supporting documentation, all of which is normally releasable within the parameters of the Freedom of Information Act (FOIA). For this reason, **no analytical data or portion of the report should be incorporated into the left.** This

provides for a concise rule of thumb for formatting all Army accident safety reports.

-- One copy of all supporting documentation organized under the appropriate tabs (SOP, weather, teardown analyses, lab reports, drivers licenses, risk assessment worksheets, etc.).

-- Photos and applicable negatives with proof sheet(s), or slides (least desirable) for the report with appropriate captions. Do not cut negative strips.

-- Name and phone number of POC for pending results from local laboratories used during the investigation.

-- Completed USASC Forms 500 for pending CCAD or other agency teardown analyses.

-- Name and phone number (both duty and off duty) of medical officer assisting the board on ground accidents. (Note: The USASC will not be featured as the addressee on AFIP laboratory results for ground accidents.)

-- Copy of EIR/QDR for materiel failure accidents.

(2) Right side. The right side of the report is reserved for all analytical material: the Board's analysis and findings and recommendations. Under most circumstances the information contained on the right side is not releasable under FOIA provisions. The USASC Judge Advocate should be consulted prior to release of any information contained in the right side of an accident report.

b. Ground accident reports. Will be formatted in the same manner as the aviation reports. See Chapter 2.

(1) Left side. Tabs 1 through 10 are fixed and sequenced. Tabs subsequent to the first 10 should be as required to substantiate key elements of the report.

(2) Right side. Tabs A through E are fixed and sequenced as depicted. The right side of the report, as with aviation, is reserved for documentation of the analysis and findings and respective recommendations. For ground accident recording purposes, some f the information documented on the right side of the report may be releasable under FOIA provisions: Witness summaries are deemed releasable unless taken under the promise of confidentiality which is granted only for those investigations whose reports have been stipulated as "Limited Use" documents at the discretion of the Commander, USASC.

(NOTE: The History of Events paragraph is not intended to be the format used in briefings or in the Preliminary Report.)

-- Witness summaries are to be written in third person context. The only exception would be if direct question and answer quotes are required for clarity. Refrain from including profanity unless needed to qualify attitude or emotion. Obscene and profane language and graphic descriptions of human suffering, emotion, etc., are to be avoided.

5. REPORT REVIEW. During the report preparation process, a board member will review the accident report prior to its being submitted for the Director's review. This quality control measure is to assure the report is complete, reflects the findings and conclusions of the investigation board, and features board-approved changes from the review and quality assurance process.

CHAPTER 5 - EXPLANATION OF APPENDICES

1. GENERAL. Most appendices listed on page iii have been identified and an explanation provided for their use. However, additional appendices are attached. Listed below is a brief description of these appendices.

2. OTHER APPENDIXES.

a. Appendix B. Chemical Events. Guidance for the conduct of accident investigations involving chemical materials.

b. Appendix M. Electromagnetic Environmental Effects (E^3). In some cases, E^3 could be related to the cause of an accident. If it is suspected to be present, follow the guidelines in this appendix.

c. Appendix N. Night Vision System Checklist. Certain accidents may involve the use of night vision goggles. If these devices were in use, it is important that all applicable data be collected in this area.

d. Appendix O. Driver Training/Licensing. Over the years, it has been noted that several deficiencies may exist in the unit's driver training program and procedures for licensing operators. As a part of your investigation involving equipment and operators, the unit's driver training program should be evaluated to determine if the proper training has been conducted.

e. Appendix Q. Command Climate Questionnaire. As a part of the human factors investigation, the command climate of the unit should be evaluated to determine if this area had any influence on the outcome of the accident. Two checklists (one for aviation and one for ground units) are provided at Appendix Q as a guide.

f. Appendix V - Risk Management. The process of risk management and the effectiveness of the process must be evaluated for each accident.

APPENDIX A

DEFINITION OF TERMS

(Ref.: AR 385-40, DA Pam 385-40)

1. Aircraft Flight or Flight-Related Accident. An accident involving Army aircraft when intent to fly exists.

a. Flight Accidents. Those accidents in which there is intent for flight and reportable damage is sustained by the aircraft. (NOTE: Explosives, chemical agents, or missile events that cause damage to a DOD aircraft with intent to fly are categorized as flight accidents to avoid dual reporting.)

b. Flight-Related Accidents. Those accidents in which there is intent for flight and no reportable damage is sustained by the aircraft, but accidents involves fatality, injury to aircrew, ground crew or passengers, or other property damage. Included in this category are rappelling, fast roping, hoist, and helocast accidents.

2. Aircraft-Ground Accidents. Those accidents in which there is no intent for flight, but at least one engine is running and there is reportable damage to the aircraft and/or reportable injury. This category includes hot refueling of aircraft on the ground.

3. Ground Accidents (Reporting by the use DA Form 285 or AGAR). Those accidents occurring on the ground, to include Army motor vehicle accidents (training), range operations, ground training accidents, parachute (free fall and static line) operations, and at maintenance/servicing of aircraft with engines not in operation.

For a complete listing of Terms see AR 385-40 and DA Pam 385-40

APPENDIX B

CSSC-Z

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Memorandum of Instruction (MOI) for Safety Investigations of Chemical Events

1. Situation. Historically, the Army Material Command (AMC) has been tasked by the Department of the Army through Army regulations and directives to respond to chemical events and to conduct safety investigations.

2. Mission. The U.S. Army Safety Center (USASC) Operations Directorate will conduct safety investigations of all Class A and B chemical events, and be prepared to conduct safety investigations or provide investigative assistance to other chemical events as directed by the Commanding General, USASC.

3. Concept. Upon notification of a chemical event, the Operations Directorate will assemble a safety investigation team from within the USASC and other agencies/commands and prepare for deployment. The Army Safety Office (ASO) will initiate coordination for a general officer (GO) board president, if required. A Chemical Accident Incident Response and Assistance (CAIRA) team Response Force, under the provisions of AR 50-6 and DA Pam 50-6, will precede the safety investigation team to the event site. Therefore, the actual deployment time for the USASC team will be coordinated by the Deputy Director of Army Safety (DASAF), through ODCSOPS, with the Response Force. ACCESS TO THE EVENT SITE WILL BE GRANTED BY THE COMMANDER RESPONSIBLE FOR CAIRA OPERATIONS.

a. Responsibilities:

(1) The Commanding General, USASC, is responsible for the safety investigation of all Class A and B chemical events and has the option to conduct safety investigations of other chemical events as deemed appropriate.

(2) The Director, Operations Directorate, is responsible for identification, training, deployment, and support of investigation teams, to include preparation for the conduct of the investigation.

(3) The ASO will provide staffing support as required during exercises or actual deployment to an event site. In addition, the ASO will inform the Director, Operations Directorate, of policy and operational issues and plans and will ensure that the Army Operations Center (AOC) has appropriate notification rosters for USASC Operations and key personnel.

(4) Other USASC divisions will provide support, as required, during exercises and/or actual deployment to an event site.

(5) The Director, Operations Directorate, will maintain notification checklists, points-of-contact lists, deployment kits, and, as a MINIMUM, three fully trained teams to respond to chemical events.

b. Coordination instructions.

(1) Notification to the USASC of a chemical event will be made by the AOC.

(2) Upon notification, USASC Operations will give first priority to notifying the (1) Director, Operations Directorate, USASC; (2) Commanding General, USASC; and (3) Executive Officer (XO), USASC.

(a) A team will be selected by the Director, Operations Directorate, and placed on standby.

(b) The ASO will assist in coordinating team members from TSG, ODCSLOG, ODCSOPS, and the appropriate MACOMs.

(3) If a chemical event occurs, it is highly probable that a GO will be appointed as board president by the Chief of Staff, Army (CSA). If that option is selected by the CSA, the ASO will coordinate the staffing requirements with the General Officer Management Office (GOMO); Director of Army Staff; Vice Chief of Staff, Army; and the CSA for selection of the GO.

(a) The USASC Operations office will maintain two GO-information books to familiarize selected GOs with the USASC and the investigative process.

(b) One GO information book will be maintained in the ASO.

(4) Once selected, the Director, Operations Directorate, will make initial contact with the GO and coordinate travel requirements.

(5) The senior investigator deployed to the event site will brief the GO upon his arrival as to the status of the team and special requirements.

(6) The USASC XO will make contact with the CAIRA Response Force PAO as soon as possible after notification of an event.

(7) Requests from the media or public concerning the safety investigation will be coordinated between the USASC XO and the Response Force PAO. The Response Force PAO will be the primary coordinator of information concerning the chemical event.

(8) Release of chemical event safety investigation board reports (including technical reports) to contractors and persons not employed by the U.S. Army is strictly forbidden unless prior approval is given by the Commanding General, USASC.

4. Logistics/Deployment.

a. Deployment kits will be maintained in the USASC Operations office and will, at a minimum, contain the appropriate regulations and publications and pre-obtained information about potential chemical event sites/areas.

b. Special protective equipment (including masks) will be provided by the supported command and/or the CAIRA Response Force.

c. Mode of deployment (for planning purposes only):

(1) Within Alabama: Mil Air (primary)
rental or government van (secondary)

(2) Within CONUS: Mil Air (primary)
Commercial Air (secondary)

(3) OCONUS: Commercial Air (primary)

CSS-Z
SUBJECT: Memorandum of Instruction (MOI) for Safety Investigations of Chemical Events

5. Command/Communication.

a. Upon arrival at the event site, the board president, or his duly appointed representative, will report to the commander responsible for CAIRA operations and inform him of the USASC team's composition, status, and support requirements.

b. The board president will ensure that USASC Operations is, as a minimum, updated on the progress of the investigation at least twice within a 24-hour period.

BURT S. TACKABERRY
Brigadier General, USA
Commanding

DISTRIBUTION:
Deputy DASAF
XO, USASC

CF:
ODCSOPS, Nuc/Chem Div
USACMDA

APPENDIX C

AVIATION POINT OF CONTACT CHECKLIST

___ 1. Orders appointing investigation board.
___ 2. Blood/urine samples from all personnel involved.
___ 3. Witness information: Name, rank, telephone number. Keep personnel segregated until they can be interviewed.
___ 4. Secure work area with access to commercial/AUOTVON telephone.
___ 5. CID/MP/Casualty reports/SIRs.
___ 6. Collect individual flight records and training records for all personnel involved.
___ 7. Individual medical records/autopsy results as applicable
___ 8. Individual personnel record(s) (field 201) for all crewmembers involved.
___ 9. ECOD initiated through support maintenance.
___10. Access to laser printer.
___11. Dedicate POC to assist the board. Usually the company ASO/Safety officer.
___12. Transportation to accident site: air and/or ground.
___13. Name and location of flight surgeon, bodies, injured.
___14. Weather statement (signed by forecaster).
___15. Unit and parent organization SOPS to include:
___ a. Training.
___ b. Administrative.
___ c. Maintenance.
___ d. Shop standards.
___ e. Crew rest.
___ f. Safety.
___ g. Crew selection.
___16. Directive/policy letters/supplements to regulations that pertain to:
___ a. That particular operation.
___ b. Assignment of tasks/missions.
___ c. Field manuals/training circulars.
___17. Safety meeting minutes/council meeting minutes .
___18. 1:50,000 map which includes location of accident site.
___19. Survey of mishap site/wreckage (if requested by board).
___20. UICs/office symbols and chain of command addresses from unit through MACOM.
___21. Name, grade of safety officer.
___22. Collateral officer's name, unit, and telephone number.
___23. Post organization chart

___24. ATC tapes (from initial contact through -1 hours).
___25. Unit pre-accident plan.
___26. Unit training schedule that covers the activity.
___27. Schedule 30 minutes with battalion and Brigade commanders for in-brief.
___28. Recovery team for aircraft (on-call).
___29. Inventory of aircraft (if Destroyed).

MAINTENANCE RECORDS

___ 1. Aircraft logbook.
___ a. DA Form 2408-5
___ b. DA Form 2408-12
___ c. DA Form 2408-13
___ d. DA Form 2408-14
___ e. Weight and balance records.
___ 2. Historical records.
___ a. Six-month file (DA Form 2408-13).
___ b. DA Forms 2408-15, 16, 17, 18.
___ c. Oil analysis records.
___ d. DA Forms 2404 retained on file.
___ e. DA Forms 2407- Maintenance Work Orders
___ 3. Equipment Improvement Report (if appropriate).
___ a. Oil analysis records and samples sent.
___ b. Fuel analysis.
___ 4. -10 Operators Manual.
___ 5. Checklist.
___ 6. ATM.
___ 7. -23 Organizational Maintenance Manual.
___ 8. Parts "P" Manual.
___ 9. Units last flying hour report for that type aircraft.
___10. Operations Information.
___ a. PPC.
___ b. Briefing forms/risk assessment.
___ c. Flight plan.
___ d. Planning weather

GROUND POINT OF CONTACT CHECKLIST

___ 1. Orders appointing investigation board.
___ 2. Blood/urine samples (Ask that the command direct the testing of all personnel directly involved.)
___ 3. Witness information: name, rank, telephone number, summaries. Keep personnel segregated until they

can be interviewed.
___ 4. Secure work area with access to commercial/AUTOVON telephones.
___ 5. SIR, Casualty, MP, CID reports.
___ 6. Personnel record(s) (field 201) for all involved to include personnel with supervisory responsibility over accident victim(s).
___ 7. ECOD initiated as applicable.
___ 8. Individual(s) medical records.
___ 9. Access to laser printer.
___10. Photo lab support (printing)
___11. Location and name of doctor conducting autopsy. (Request a doctor on the board be a part of the autopsy).
___12. Weather statement (signed by forecaster).
___13. Aircraft on standby for the board to take overhead photos of accident site.
___14. Unit and parent organization SOPs to include:
___ a. Training/ Administrative.
___ b. Maintenance.
___ c. Shop Standards.
___ d. TACSOP
___15. Directives that pertain to that particular operation or assigned tasks.
___16. Training folders (individual, unit).
___17. Individual counseling records.
___18. Individual SF 46 if vehicle accident.
___19. Individual 348 and training records if vehicle accident.
___20. 1:50,000 map which includes accident site.
___21. UICs/office symbols and chain of command to MACOM.
___22. Secure all equipment used for this operation (i.e. ropes, field gear, parachute, etc.)
___23. Name, grade, title of safety manager, and address to send report.

MAINTENANCE RECORDS
(Vehicular/equipment accidents)

___ 1. DA Form 2404, Daily Inspection Worksheet
___ 2. DA Form 2404 retained on file (quarterly/semi-annually).
___ 3. DA Form 2404, Deferred Maintenance Worksheet.
___ 4. DA Form 2407, Maintenance Work Orders.
___ 5. DA Form 2408-20, Oil Analysis Record.
___ 6. DA Form 314, Preventive Maintenance Record.
___ 7. DA Form 2406, Materiel Condition Status Report.
___ 8. Calibration Records.
___ 9. Dispatch (1970).

___10. Dispatch log (2401).
___11. Equipment logbook.
___12. -10 Operator's Manual.
___13. -20 Organizational Maintenance Manual.
___14. "P" Parts Manual.
___15. All associated equipment components for technical inspection.

Provide those records that pertain to the equipment which is used or contributed to the accident. All equipment used or involved in an accident must be kept undisturbed and secured at the accident site until the accident investigation board releases it for recovery.

APPENDIX D

INITIAL CRASH SITE ACTIONS

COMPOSITE MATERIAL SAFETY

References:

AR 11-34: The Army Respiratory Protection Program
AR 385-10: The Army Safety Program
DODI 6055.1: DOD Occupational Safety and Health Program
TAB I, Annex 1: USASC Accident Prevention Program

1. Purpose. To ensure that exposure to composite materials does not result in physical harm or illness to investigators.

2. Responsibilities.

a. Safety Personnel. Safety personnel must evaluate all accidents (both air and ground) to ensure that composite material will not result in endangerment to unit or investigative personnel. Guidelines for evaluation are listed in paragraph 5. Additionally, safety personnel will ensure the following:

(1) That a Composite Material Safety Kit is issued to the Board President of an investigation team if protection from composite material is determined to be required.

(2) That coordination is made with the activity incurring the accident so that on-site personnel can properly equip themselves to prevent injury. Guidelines for use of proper equipment are contained in paragraph 6.

b. Board President. The accident team Board President has the overall responsibility to ensure personnel are properly attired and equipped for an investigation involving composite materials. Specifically, he will:

(1) Ensure only properly equipped board members enter the accident site area. See paragraph 6 for proper equipment.

(2) Ensure that recovery team support is properly attired to prevent composite material injury or illness.

c. Individual board members. Board members have the responsibility to ensure they use the appropriate protective equipment when subjected to fragmentation and/or burning of composite materials. See paragraph 6 to determine the proper equipment.

3. Background. Accidents involving composite materials which fragment or burn upon, or after, impact or collision may pose a significant health threat to investigation teams. The primary threat is from inhalation of burning composites or the splintering of composites into the body. Those aircraft and vehicles which contain a potentially damaging quantity of composite materials include but are not limited to-----

UH-1, AH-1, AH-64, CH-47D, OH-58D, RAH-66, UH-60, V-22 HMMWV, M-1 ABRAMS, M-2/M-3 BRADLEY, M-9 ACE, M-109 HOWITZER, M-113 APC

To preclude potential harm, certain actions must be taken by investigating personnel to minimize danger. This section explains those actions.

4. Equipment to be used by investigation teams:

a. Upon the determination that a composite material hazard exists, a Composite Material Safety Kit will be issued and will contain the following:

(1) Two NIOSH approved respirators (full face, dual filter) to be used when fire has consumed composite materials or fragmentation exists.

(2) Tyvek Disposable Coveralls (two sets for each investigator). These will be used when a fire has involved composite materials.

(3) Four sets of leather gloves to be used whenever fire has occurs <u>or</u> severe fragmentation is present.

(4) Four sets of rubber surgical gloves to be used as inserts to the leather gloves.

b. With the exception of the respirators, all equipment <u>must be discarded</u> after use to prevent potential subsequent injury.

5. Evaluation criteria for issue of Composite Material Safety Kit. In evaluating an accident where composite material is involved, the following must be considered:

a. Fire
b. Fragmentation

If either of the above are involved, then a Composite Material Safety Kit must be issued.

6. Proper equipment use. To ensure that all personnel are adequately protected, the following guidelines must be followed:

a. Burning aircraft or ground vehicles/equipment. Only emergency rescue personnel or fire fighters should be in the immediate vicinity of the accident site during the burning and smoldering phases.

b. Previously burned composite materials (fire extinguished, no smoldering). All protective equipment, to include respirators, coveralls, and leather gloves with inserts, will be worn at the accident site.

c. Fragmented composite materials (no fire involved). Leather gloves, with inserts, are to be worn as a minimum. However, if composite materials are to be moved, then coveralls and respirators will also be worn.

7. On-site procedures. These are procedures designed to minimize the dangers of composite material fragmentation to personnel in the vicinity of the accident site.

a. Security. The accident site must be cordoned off with a single entry and exit point. All unauthorized personnel must be restricted from the accident site and personnel should avoid downwind locations.

b. Post-accident fire. Once the fire has been extinguished, the wreckage cooled, and no smoke exists, the composite materials must be sprayed with a fixant. A fixant is similar to an acrylic floor wax which can be locally purchased or commercially procured. Alternatively, polyacrylic acid (B. F. Goodrich XL-II) can be used. Either product is satisfactory and must be sprayed on the entire area consumed by fire. By doing this, the composite material fragments are held in place.

c. Prior to shipment of composite materials, ensure they are heavily wrapped in plastic.

d. All personnel must shower as soon as reasonably possible after working with burned composite materials.

e. All equipment (except the respirators) can be discarded as non hazardous waste material after use (see installation industrial hygienist for correct method of destruction). Respirators will be serviced by the safety officer upon completion of the safety investigation.

BLOODBORNE PATHOGENS

1. PURPOSE: To provide guidance to personnel investigating accidents which involve the possible exposure to human blood or body fluids. Extreme care must be taken to minimize exposure to bloodborne pathogens.

2. BACKGROUND: During an accident sequence, blood and body parts can easily contaminate the equipment and immediate area of the accident scene. Exposure of rescue and investigative personnel to bloodborne diseases can cause immediate or long term health problems, or death. Personnel who assist in the recovery of parts or components may unknowingly come into contact with blood soaked items and become infected.

3. Work Practices:

a. Every accident site should initially be treated as a contaminated area. After the immediate stabilization and evacuation of survivors, no one should be allowed into the accident site until it has been cleared of contamination or until personnel are provided the appropriate protection. Removal of bodies or body parts should only be done by qualified and properly equipped medical personnel.

b. The accident area must be roped off with a single entry/exit point and secured to control and prevent unauthorized access. The extent of the contaminated area will be designated by the base industrial hygienist/appropriate medical authority.

c. All personnel entering the contaminated area must wear appropriate protective equipment (below). Ensure enough protec-

tive equipment is available to multiple entries into the area. Any person who picks up blood contaminated parts or equipment must also be protected. Once the individual leaves the contaminated area, all equipment, except the respirator will be properly bagged and disposed of as biological hazard waste. The flight surgeon/medical authority will normally accomplish this.

d. All of the victim's equipment and personal clothing, etc., which is contaminated must be identified and disposed of as a biological hazard waste. Do not dispose of clothing/equipment until the board has had an opportunity to examine the materials. The investigation board medical representative is responsible for the proper identification and disposal. Personal belongings (rings, watches, etc.) can be returned to family members if and when they can be sanitized. Military equipment (flight helmets, CTA 50 items) may be returned to the unit if they can be sanitized. Military equipment will not be released to family members.

e. If equipment is to be shipped to a medical laboratory (USAARL) for analysis, do not clean or alter it in any manner. Ensure the articles are properly wrapped in a plastic bag (multiple wrap) and marked as a biological hazard.

f. The following is a guide for the minimum equipment necessary for personnel exposed to biological hazards: Once used, the equipment, except the respirators, must be bagged and treated as biological waste hazards. The local military hospital usually will handle the waste disposal.

1. NIOSH-approved respirators with biological filters. One respirator with several filters per individual.

2. Tyvek Disposable coveralls (at least two sets per individual in contaminated area).

3. Rubber surgical gloves. Recommend medical personnel have a box (100+) on hand at the site. Anyone handling parts, clothing, etc., must wear gloves.

4. Leather gloves as appropriate for the recovery of metal or fragmented machine parts.

CRASH/ACCIDENT SITES (General)

1. Keep all personnel outside secured area until site photography is completed and cleared into area by board president or material factors group leader.

2. Do not move (or touch) any item (parts, pieces, controls, etc.) or disturb ground scars or marks until properly documented and until the site is released by the investigator in charge.

3. Systematically record and photograph instrument readings, control positions, switch positions, avionics equipment settings as soon as possible.

4. Systematically inventory aircraft parts/components to determine if all are accounted for.

5. Important facts to collect at the scene include location and orientation of all MAJOR components, ground impact scars, first impact point (may be in a tree, etc.), terrain (i.e., slope, height of trees, depth of snow or grass, etc.).

6. Utilize instrument work sheet on next page.

INSTRUMENT/CONTROL SETTINGS WORKSHEET

ITEM	POSITION/SETTING	REMARKS
1. Flight Controls:		
Cyclic/Yoke		
Throttle/Quadrant		
Collective		
Flaps		
Landing Gear		
2. Flight Instruments:		
Airspeed		

Vertical Speed

RMI

Magnetic Compass

Altimeter (Altitude)

Altimeter (Kolsman Window)

3. Engine Instruments (List):

1.

2.

3.

4.

5.

ITEM	POSITION/SETTING	REMARKS

4. Avionics (Navigation):

ADF #1

ADF #2

Marker Beacon

VOR/ILS

5. Avionics (Communications):

VHF #1

VHF #2

UHF #1

UHF #2

FM #1

FM #2

6. Avionics (Miscellaneous):

Radar Altimeter

Autopilot

SAS/SCAS

Other

7. Miscellaneous (i.e., Switches):

Fuel Switch

External Lights

Internal Lights

Power/Battery switches

Circuit Breakers - Identify all circuit breakers not engaged

APPENDIX E

INVESTIGATION TEAM DEPLOYMENT BRIEFING

ACCIDENT TIME/LOCATION

TYPE EQUIPMENT

SUMMARY OF ACCIDENT

POC CHECKLISTS FAXED TO POC

ACCIDENT UNIT POC/TELEPHONE #

DESTINATION CITY

SPECIAL CLOTHING/UNIFORMS REQUIRED

PICK UP TDY ORDER (WHEN, WHERE)

REQ EQUIP:	CONFIRMED BY PRESIDENT	RECORDER	SFTY SPC
FILM			
CAMERA			
RECORDING TAPE			
SPECIAL TOOLS			
INVEST HANDBOOKS			
TAPE REC W/BATTERIES			
FORMS/RECORDS 2397/285			
REFERENCES			
COMPOSITE MAT INVES KIT			
CHEMICAL EVENT INVES DEPL KIT			
DATA PULL FOR APPROPRIATE INFORMATION			

PASSPORT (IF REQUIRED) __

INITIAL NOTIFICATION INFORMATION FORMS __

CALLING CARD __

SIGN-OUT (DA FORM 647-1) __

CAR RENTAL RESPONSIBILITIES __

SUGGESTED COMPOSITION OF ACCIDENT INVESTIGATION KIT

ITEM	QTY

Case, Aluminum	1
Transcriber	1
Camera w/Lens and Flash	1
*Film (Prints and Slides)	4
Recorder, Microcassette w/Tapes	1
Inclinometer/Abney Level	1
Tape, Steel, 100 Ft.	1
Range Finder, Optic	1
Flashlight	1
Compass, Lensatic	1
Magnifier, Small	1
Pocket Multitool w/Case	1
Steel Ruler, 1 Ft., w/Large Index	1
Screwdriver, Flat Tip	1
Screwdriver, Cross Tip	1
Pliers	1
Wrench, Crescent 8-Inch	1
Investigators Handbook	1
AR 385-40	1
DA Pam 385-40	1
Apropriate Forms	As Necessary
Additional Reference	As Necessary
*Batteries	As Necessary

*To be picked up prior to departure.

Appendix F

INITIAL BOARD BRIEFING

Reference: DA Pam 385-40

In most cases, this will be the first time any of the board members has performed an accident investigation. It is important that everyone understand the mission and end result of the accident investigation. The initial board briefing, conducted by the president, should include at least the following:

1. Introductions (office/phone #).
2. Ensure board is comprised of personnel qualified in the system under investigation; i.e., technical inspector, maintenance officer, medical doctor(per AR 385-40).
3. Explain that they are to be dedicated to the investigation.
4. Explain investigative mission:
    a. For accident prevention purposes only. Investigative results CANNOT be used for personnel actions or in support of determining legal liabilities.
    b. Human/materiel/environmental causes.
    c. Approximate duration of investigation (2 weeks).
5. Recap date/time/summary of accident.
6. Explain task errors/system inadequacies (briefly)
7. Review DA Pam 385-40 as a guide for completing the forms.
8. Explain investigation:
    a. Data collection phase- Collection of the factual information.
    b. Analysis phase- Analysis of the factual information to determine its (proximate???) relevancy/correlation to the accident. Additional data collection may ensue pursuant to those issues raised during this phase.
    c. Deliberations phase- The board’s proceedings to collectively identify the cause of the accident, determine why it occurred, formulate the findings, and present recommendations to prevent recurrence.
9. Assign work groups/leaders:
    a. Human factors (doctor, IP, training specialist)
    b. Materiel factors (test pilot, TI, maintenance technician)
10. Explain report preparation

11. Assign responsibility for report sections:
    a. History of flight/events (president)
    b. Human Factors
    c. Materiel Factors
    d. Analysis (president)

e. Findings/recommendations (president)
f. DA Form 2397/285 series (all groups)

12. Establish a daily meeting time to exchange information.
13. Allow work groups organization time.
14. Request for support personnel (i.e., CCAD, Natick Lab, AMCOM, etc.) will be coordinated through USASC operations, DSN 558-2660/3410.
15. Discuss release of information outside board.
16. Discuss work relationship with the collateral investigation board.

APPENDIX G

GROUND NARRATIVE OUTLINE

(Reference: DA Pam 385-40)

1. History of Events.

   a. Preaccident phase
   b. Accident phase
   c. Postaccident phase

2. Human Factors Investigation.

   a. Personnel background information
   b. Personnel management
   c. Vehicle/system/equipment suitability
   d. Communications
   e. Meteorological information
   f. Support services
   g. Accident survivability
   h. Rescue operations
   i. Special investigation
   j. Witness investigation

3. Materiel Factors Investigation.

   a. Vehicle/system/equipment worthiness
   b. Systems
   c. Engine
   d. Transmission
   e. Laboratory Analysis
   c. Accident site information
   d. Fire (if applicable)

4. Analysis. (See Appendices J and I)

   a. Environmental Factors
   b. Materiel Factors
   c. Human Factors
   d. Other (present but not contributing factors and/or observations)

APPENDIX H

AIRCRAFT NARRATIVE OUTLINE

(Reference: DA Pam 385-40)

1. History of Flight.

   a. Preflight phase.
   b. Flight phase.
   c. Postflight phase.

2. Human Factors Investigation.

   a. Personnel background information.
   b. Personnel management.
   c. Aircraft suitability.
   d. Communications/air traffic control.
   e. Navigational aids.
   f. Meteorological information.
   g. Ground support services.
   h. Crash survival.
   i. Emergency egress, survival, and rescue.
   j. Special investigation.
   k. Witness investigation.

3. Materiel Factors Investigation.

   a. Aircraft airworthiness.
   b. Flight recorders.
   c. Airframe.
   d. Systems.
   e. Power plant.
   f. Rotor system or propellers.
   g. Transmissions/gearboxes and drive train.
   h. Laboratory analysis.
   i. Crash site information.
   j. Fire.

4. Analysis. (See Appendices I and J)

   a. Environmental factors.
   b. Materiel factors.
   c. Human factors.
   d. Other (present but not contributing and/or observations)

APPENDIX I

INSTRUCTIONS FOR ANALYZING HUMAN ERROR

1. The 3W approach for determining causes of accidents as it relates to our reports is as follows:

WHAT HAPPENED - Task Error
WHY DID IT HAPPEN - System Inadequacy
WHAT TO DO ABOUT IT - Recommendations

2. The “why,” or system inadequacy, is the most valuable portion of the finding. The recommendation(s) must be geared to fix the system inadequacy rather than the task error. (See DA PAM 385-40 for examples of failures.)

3. Although human errors are relatively easy to identify in accidents, the associated system inadequacies are key in accident prevention and often the most difficult to determine. Accident investigators will define system inadequacies in terms of the following:

a. Support Failure
   - Type/capability/amount/condition of support sufficient

b. Standards Failure
   - Standards do not exist.
   - Standards exist but are not clear or practical.

c. Training Failure
   - Standards exist but are not known.
   - Ways to achieve standards are not known.
   - Inadequate experience or training.

d. Leader Failure
   - Standards are known but not enforced.
   - Inadequate supervision.

e. Individual Failure

- Standards are known but not followed.

4. When conducting the commander's outbrief (see format at Appendix K), the analysis of any human error factors should be explained in the terms above, since most human error accidents are the result of failing to train to or following standards. Do this through the following methodology:

a. Explain how/why standards, leader, training, or individual failure was eliminated.

b. Explain how your conclusion that standards, leader, training, or individual failure, or a combination thereof caused the accident.

APPENDIX J

FORMAT AND STRUCTURING OF PARA 4, ANALYSIS, IN NARRATIVE OF INVESTIGATION

(Reference: DA Pam 385-40)

1. General Information. The analysis paragraph in the narrative of the investigation is recorded on DA Form 2397-3-R for aviation accidents and in Tab D of the accident report for ground accidents. The analysis paragraph summarizes the information in the first three paragraphs and includes the opinions and conclusions of the investigation board. The analysis documents the deliberation phase of the accident investigation and fully supports the findings recorded by the Board.

2. Format. The analysis is recorded in narrative format and begins with the scope and general conclusions of the Board. In all cases, begin the paragraph with: "After analyzing the human, materiel, and environmental data collected during the investigation, the Accident Investigation Board concluded that the accident was caused by ..." Complete the sentence by specifying the factor(s) (human, materiel, or environmental) which caused or contributed to the cause of the accident; e.g., "...human error on the part of both crewmembers. The Board further concluded that materiel failure, after the onset of the emergency, contributed to the severity of the accident. The rationale for these conclusions is as follows:" **Note that all major factors (human, materiel, and environmental) are addressed in terms of whether they caused or contributed to the cause of the accident.**

The analysis is not a regurgitation of the history or other portions of the narrative, but is a documentation of the Board's assessment of that information in relation to the cause(s) of the accident. Subparagraphs are used to fully explain the results of

the deliberations with the major subparagraphs recorded as: Environmental Factors, Materiel Factors and Human Factors. Each major factor is addressed as to the cause-and-effect relationship of the evidence gathered during the investigation. Refer to specific factual data to support the conclusions. There is no set precedent for the order in which it is addressed.

3. Environmental Factors. Discuss in this subparagraph the environmental factors and conclude if you ruled in or ruled out environmental factors, to include weather, as causing or contributing to the cause of the accident. All contributing environmental factors are addressed in detail, to include the cause and effect relationship. The information recorded is used to document cause-related environmental findings.

4. Materiel Factors. All contributing materiel factors are addressed in detail, to include the cause and effect relationship. Use specific technical data verbiage when possible and refer to the technical reports from which obtained. If materiel failure/malfunction did not cause or contribute to the cause of the accident, a simple statement to that fact may by sufficient to document the materiel factors analysis.

5. Human Factors. All contributing human factors are addressed in detail in narrative format. Refer to technical data, witness summaries, photographs, etc., to support the analysis. Attempt to separate the information presented by subject, if possible; e.g., command, instructor pilot, pilot, pilot-in-command, driver, senior occupant, air mission command, company commander, platoon leader, flight lead, training, etc. Often, it becomes necessary to rule out specific human factors for simplicity, even though the specific human factor may not have caused or contributed to the cause of the accident. Each issue should be recorded as having been concluded by the Board and supported by reference to

other data or information.

6. Other. After all contributing factors are recorded as concluded, any other factors that the Board feels need to be addressed are added. These factors should also be concluded by the Board and supported by data found else where in the report. Observations may be added if the Board desires; however, if issues are recorded as observations, they are recorded as the last issues in the analysis paragraph and may not get the same command attention as issues addressed as present but not contributing findings.

APPENDIX K

FORMAT OF ACCIDENT OUTBRIEF

Cover Slide
Background Slide
- Unit
- Equipment
- Date/Time
- Location
- Injuries
- Mission

Excuse Collateral Board Members (Standard Format Slide)
Board Members
Pre-Accident/Flight *
- Brief Synopsis

Post-Accident/Flight *
- Brief Synopsis

Analysis
- Human **
- Material **
- Environmental **

Findings And Recommendations
- Present And Contributing
- Suspected Present And Contributing
- Contributing To The Severity Of The Injuries/Damage
- Present But Not Contributing

Special Observations (If Applicable) (Will not be recorded in the final findings and recommendations, but included in the last paragraph of the analysis.)

Laudatory Comments
Questions

* Photos can be placed in the briefing at the descretion of the Board President.

** Will normally be listed in the order of importance as determined by the Board President.

APPENDIX L

FORMAT FOR THE PRELIMINARY REPORT- The Preliminary report is for Safety Center Use as a briefing tool for upper echelon commands.

1. Right Side - Tabs

TAB	INFORMATION REQUIRED
A	Summary of Accident
B	Findings & Recommendations as briefed in the out brief.
C	Command Out brief/Feedback and list of attendees.

2. Left Side

   Photos with captions

APPENDIX M

ELECTROMAGNETIC ENVIRONMENTAL EFFECTS (E^3) CHECKLIST

1. E^3, formally known as electromagnetic interference (EMI), is a recognized potential cause factor and should be thoroughly evaluated during all accident investigations to determine if E^3 could or could not have influenced the operation of the equipment involved. If E^3 could have been a factor, then it must be rigorously evaluated. E^3 should be considered a potential cause factor for any air or ground system with electronic components, especially modern, complex systems.

2. The following E^3 checklist is recommended for use whenever E^3 is suspected as a cause factor. Use of a checklist will ensure a thorough evaluation of E^3.

ELECTROMAGNETIC ENVIRONMENTAL EFFECTS CHECKLIST

1. During the initial stages of the investigation, attempt to determine if there is any evidence of an external influence on the aircraft/vehicle/weapon system or its subsystems. Consider cockpit/instrument indications reported by surviving crewmembers, eyewitness reports, and other physical evidence. This is especially important where the physical evidence indicates that the aircraft/vehicle/weapon system was out of control prior to accident sequence termination.

2. If E^3 can be ruled out as a causal factor during this stage, then document the actions taken to eliminate E^3. For aviation accidents, document this in paragraph 2j (Special Investigation) of the DA Form 2397-3 narrative (i.e., E^3 was considered but ruled out for the following reasons:). For ground accidents, document this in the Narrative of DA Form 285, para 2I, Special Investigation.

3. If E^3 cannot be eliminated early on or there are positive indications of an external influence, advise USASC Operations immediately at DSN 558-3410/2660, and request technical assistance. In addition, perform the following:

    a. Check for High Intensity Radio Transmission Areas (HIRTAs) in the area of the accident. Note VFR sectional or tactical map for large towers (transmitters) within 5 miles of the accident site.

b. While taking aerial photographs of the accident site, recon the area surrounding the accident (5 miles) for large towers (transmitters) such as radio/television, telephone microwave, radar, etc.

(1) All towers (transmitters) are considered a potential source and should be plotted on a diagram in relation to the accident site.

(2) Contact owners of the towers (transmitters) to determine:

(a) Hours of operation.

(b) Nature of transmission(s) (signal power level and frequency).

(c) Signal beam width.

(d) Azimuth(s) of transmitter signal(s).

c. For aviation accidents, gather any and all available ATC tapes, to include radar and voice, for later review.

d. If there are surviving crewmembers, record all cockpit/instrument indications experienced during the accident (i.e., caution/warning/advisory light illumination, audio warning tones, degradation/loss of flight controls, stiffness of pedals, etc.). Compare cockpit/instrument indications against the data base of known type aircraft responses to E^3.

e. If there are no surviving crewmembers, analysis of the above data plus any additional information gained from flight data recorders (if so equipped) will indicate possible contribution to E^3.

f. Close coordination with Operations will be maintained throughout the E^3 investigation. Detailed analysis of the above data will be conducted at the USASC by Aviation and/or Ground Systems and Accident Investigations.

g. E^3 can be eliminated as a causal factor only if accident circumstances (physical evidence, aircraft/vehicle maintenance history, witness statements, etc.) indicate a failed part or human error was the primary cause.

APPENDIX N

AVIATIION NIGHT VISION DEVICE (NVD) ACCIDENT REPORTS

(Enter required data using common sense; that is, mark with an "X" or check, or answer at the prompt. In all cases, Y=Yes, N=No, U or UNK=Unknown.)

CASE NUMBER:_____

INDIVIDUAL COMPLETING FORM:_____

AIRCRAFT DATA

TYPE/TAIL NUMBER: _____

WINDSCREEN CONDITION: GOOD_____ MED_____ POOR____

WINDOWS: CLOSED____ OPEN____

DOORS: COCKPIT: CLOSED____ OPEN____ REMOVED____

CARGO: CLOSED____ OPEN____ REMOVED____

ENVIRONMENTAL DATA:

MOON: RISE_____ SET_____

% ILLUM_____ ANGLE_____

HORIZON: VISIBLE_____ OBSTRUCTED____ OTHER____

VISIBILITY: MILES_____ RESTRICTIONS: FOG_____

MIST_____ SMOKE_____ OTHER_____

TEMPERATURE (Cent): _____

DEWPOINT (Cent): _____

HUMIDITY: _____

DESCRIBE TERRAIN: FLAT_____ ROLLING_____ MOUNTAINOUS_____

BACKGROUND REFLECTANCE: SAND___ DIRT___ GRASS___ WATER___FOREST___

AREA: REMOTE___ POPULATED___ ISOLATED___ SPARSELY POPULATED___

NVD's

	PILOT	COPILOT	CREW CHIEF
NVG (PVS-5,A,B,C; ANVIS, etc.)			
TUBES, NEW OR REBUILT (SAAD)			
TIME ON TUBES (SINCE LAST INSPECTION)			
SERIAL NUMBER ON LEFT TUBE			
SERIAL NUMBER ON RIGHT TUBE			
SERIAL NUMBER OF NVD			
LAST INSP DATE OF NVD AND TYPE TEST SET USED (3895-UV, ALT-TP, HANDHELD)			
DATE OF LAST NITROGEN PURGE LEFT TUBE:			
RIGHT TUBE:			
RECORDS KEPT ON NVD's (Y/N)			
TYPE MOUNTING DEVICE (GX-5, GM-6) MODIFIED FACE PLATE			
TYPE STRAPS USED TO MOUNT NVD's (RUBBER,STRAPS,UNK)			
TYPE COUNTERWEIGHT (SOLID NONE, UNK)			
WEIGHT OF COUNTERWEIGHT IN OUNCES			
DID COUNTERWEIGHT BREAK AWAY? (Y/N/U)			
DID COUNTERWEIGHT CONTRIBUTE TO INJURIES? (Y/N/U)			
DID NVD CAUSE OR CONTRIBUTE TO INJURIES? (Y/N/U)			
IF INJURIES OCCURRED, WERE THEY TO EYES/HEAD/FACE/OTHER?			

	PILOT	COPILOT	CREW CHIEF
WERE ANY EYEGLASSES WORN?	_____	_____	_____
WHAT TYPE OF EYEGLASSES? (GLASS/PLASTIC/POLYCARBONATE)	_____	_____	_____
WAS LANYARD WORN AROUND NECK? (Y/N/U)	_____	_____	_____
WERE BATTERIES REFRIGERATED BETWEEN USE? (Y/N/U)	_____	_____	_____
INDICATE TYPE BATTERY PACK (DUAL, ARTIC ADAPTOR, TRIPLE)	_____	_____	_____
TYPE BATTERIES INSTALLED IN NVD OR BATTERY PACK (LITHIUM, MERCURY, ALKALINE)	_____	_____	_____
DID CREWMEMBER RECEIVE A LOW BATTERY PER INDICATION? (Y/N/U/NA)	_____	_____	_____

AUXILLARY LIGHTS

NOTE: ENTER COLOR CODES			
G = GREEN	NONE:	_____	_____	_____
W = WHITE	FINGER:	_____	_____	_____
R = RED	LIP:	_____	_____	_____
B = BLUEWRIST:		_____	_____	_____
Y = YELLOW	FLASHLIGHT:	_____	_____	_____

LIGHTING DATA

FOR POSITION LIGHT: ENTER S (STEADY), F (FLASH)
FOR ANTICOLLISION LIGHT: ENTER R (RED), W (WHITE), ST (STROBE)

EXTERNAL: COMPLETED FOR LIGHTS ON. (CHECK AS APPROPRIATE OR ENTER DATA.)

POSITION/NAVIGATION: BRIGHT_____ DIM_____ UNK_____
ANTICOLLISION LIGHTS: TOP____ BOTTOM____ SIDES____ UNK____
INFRARED POSITION LIGHTS: BRIGHT_____ DIM_____ UNK_____
FORMATION LIGHTS: ON____ 1____ 2____ 3____ 4____ 5____
LANDING LIGHT: INFRARED____ VISIBLE____ WATTAGE____
POSITION____ RHEOSTAT____
SEARCHLIGHT: INFRARED____ VISIBLE____ WATTAGE____
POSITION____ RHEOSTAT____

BEAM WIDTH IN DEGREES: _____

LANDING LIGHT/SEARCHLIGHT: FOR POSITION, SPECIFY ANGLE REARWARD (R) OR FORWARD (F) IN RELATION TO VERTICAL AND AZIMUTH; LEFT (L) OR RIGHT (R) OF NOSE (10F/10R). IF LIGHT IS ON CENTERLINE OF NOSE, USE (C) FOR AZIMUTH; E.G., 90R/C (LANDING LIGHT IS STOWED AND ON CENTERLINE)

NVG MODIFICATIONS

YES_____ NO_____ MWO 1. _____
2. _____
3. _____

RED LIGHTED COMPONENTS: YES_____ NO_____

TYPE: 1 - EYEBROW
2 - DIMPLE
3 - FLOOD
4 - BEZEL
5 - INTERNAL
6 - SUPPLEMENTAL

COLOR: W = WHITE
R = RED
B = BLUE
Y = YELLOW
G = GREEN

NOTE: - CHECK OFF OR ON
- ENTER CODES FOR TYPE AND COLOR

PANEL LIGHTS/CONSOLE/OVERHEAD:	OFF____	ON____	TYPE____	COLOR____
AVIONICS LIGHTS:	OFF____	ON____	TYPE____	COLOR____
INSTRUMENT LIGHTS:	OFF____	ON____	TYPE____	COLOR____
MAP LIGHT/UTILITY:	OFF____	ON____	TYPE____	COLOR____
CAUTION/WARNING LIGHTS:	OFF____	ON____	TYPE____	COLOR____

NOTE: IF NEEDED, PUT COMMENT ON DA FORM 2397-3.

APPENDIX O

DRIVER TRAINING CHECKLIST

1. INSTRUCTIONS.

Complete for each driver of vehicle(s) involved in the accident and for review of the unit's driver training program IAW AR 600-55.

2. Review individual's DA Form 348 and OF 346 for validity and currency (Use AR 600-55 and FM 55-30 for instructions/ maintenance of these forms.) Place comments on the back of this form.

NOTE: Include COPY of OF 346 and DA Form 348 on the left side of the report. Soldiers undergoing driver training or equipment operator training must be in possession of a learners permit for that piece of equipment.

3. Review adequacy of unit's driver training program (required at battalion level or above). Use AR 385-55, AR 600-55, FM 55-30, FM 21-17, and TC 21-306 for tracked vehicles and equipment as a guide. Place comments on the back of this form.

4. Length of time assigned to unit? _____ months

5. Duty position? _____

6. Military driving experience?

Accident vehicle _____
Wheeled vehicles:
All tractors _____
Buses _____
Sedans/vans_____
Trucks (less than 2 1/2 ton) _____
Trucks (over 2 1/2 ton)_____
Tracked vehicles _____

7. Estimate total military miles/hours driven per vehicle.

Has the individual been involved in mishaps previously? If so, has the individual received remedial training?

8. Was individual licensed during AIT and on what type of vehicle? (Yes/location; No)

_____

9. Has individual ever received classroom instruction on accident avoidance IAW para B-4, AR 385-55? (Y/yr & mo; No) _____

10. Length of time since annual refresher training on accident vehicle? _____ months.

11. The following questions pertain to the individual's local driver selection/testing/training procedures.

a. Was there a commanders interview?
b. Did the individual have a private vehicle license?____CDL?____

c. At what level is the local program being conducted? (Battalion, Brigade, Installation, etc.)_____
d. Did procedures include a road test and on what type of surface? _____ On the accident vehicle? _____
e. Did procedures include operation of auxiliary equipment on accident vehicle? _____
f. Did procedures include emphasis on use of seatbelts?_____
g. Did procedures cover contributory (this accident) factors? (Y, N, N/A) _____
h. Is the local program contracted out? _____
i. List qualifications/standards required of the local program supervisor/administrator (include MOS and grade of individual currently assigned)

_____
_____
j. Are local procedures actually being followed? _____
k. Remarks. _____
_____

12. Were NVGs being utilized? _____ (If yes, utilize the attached NVG checklist).
13. Is there a NVG driver training program?

APPENDIX P

WITNESS INFORMATION HANDOUT BRIEF

1. It shall be the policy of the U.S. Army Safety Center to comply with the standards for promises of confidentiality that are contained in DA PAM 385-40.

2. The following guidance will be used in order to maintain standardization and ensure that all personnel interviewed understand the purpose of the investigation, how information derived from the witness will be used, who will have access to the information, and the DOD regulations concerning use of the information provided.

a. The board president or recorder will brief each witness concerning the interview. He will read the WITNESS INFORMATION INSTRUCTIONS on DA FORM 2397-4/285-W-R for all witness interviews for "General Use" and "Limited Use" investigations.

b. In "Limited Use" investigations, a promise of confidentiality may be offered to a witness when it has been determined necessary by the board in order to obtain information necessary to the investigation. When a promise of confidentiality is offered, the board president or recorder will read the WITNESS INFORMATION INSTRUCTIONS, and will have the witness indicate his or her choice regarding confidentiality on the DA Form 2397-4285-W-R. Confidentiality will routinely be offered to the following witnesses:

--Accident aircraft crew members (PC, PI, crew chief)
--Technical inspectors, maintenance pilot, maintenance personnel
--Accident vehicle crewmembers (drivers, TCs, loaders, gunners, observers) only when the accident report has been designated by the Commander, USASC, as a “Limited Use” Safety Accident Report.

Confidentiality may be offered under the “Limited Use” stipulation to any witness who may have direct impact on determining the cause of the accident, when deemed necessary by the Board President. If he determines that a promise of confidentiality is necessary in the conduct of the investigation, he must first obtain permission from the Commander, USASC, to designate the report “limited use.”

c. All information obtained through enhanced recall/hypnosis will automatically be treated and designated as confidential.

APPENDIX Q

COMMAND CLIMATE CHECKLIST

1. What is the PC, crew, flight lead selection process in the unit?

2. What is the UT selection process in the unit?

3. How are aviators distributed within a unit?

    --Are senior aviators (CW3/4, CW5) and/or IPs equally distributed throughout the organization to the extent possible?

4. Is the commander and/or platoon leader (or appropriate leader) current and proficient in the aircraft and equipment assigned to his unit, e.g., NVGs?

5. Does the unit perform its mission requirements without "surging" on a continuing basis?

    -- If not, why not? Is it because of:

        -- Management (operations, aviation maintenance, personnel)?
        -- Leadership?
        -- Mission requirements out of balance with resources?
        -- Everything #1 priority?

6. Does the pace of the unit operations and mission requirements appear excessive or out of line with available resources?

    -- Crawl, walk, run concept appear sound?

7. From the flight surgeon's perspective, are the aviators healthy (mentally and physically)?

    -- Are the same aviators in the unit incurring the accidents?

8. Are training programs in line with the unit mission?

    -- What is the unit's NVG training program?

9. What is the IP-to-pilot ratio in the unit?

10. Is the unit experiencing difficulties in meeting various currency requirements (i.e., NVG)?

11. Is RL progression within the unit on track?

12. What has been the aviator turnover rate for the past year? (PCS, TDY, retire, etc.)

13. Does the unit have sufficient pilots to man their aircraft or are they forced to cross-level among units?

14. Are there sufficient crew chiefs in the unit?

15. What is the utilization rate for aircraft mechanics on a day-to-day basis?

NON-AVIATION ACCIDENT COMMAND CLIMATE INDICATORS

1. What is the crew, TC, driver selection process in the unit?

2. How are NCOs (E5 through E9) distributed within a unit?

    --Are senior NCOs equally distributed throughout the organization to the extent possible?

    --What is the authorized versus on-hand strength?

3. Is the commander and/or platoon leader (or appropriate leader) current and proficient in the equipment assigned to his unit, e.g., NVGs?

4. Does the unit perform its mission requirements without "surging" on a continuing basis?

    -- If not, why not? Is it because of:

        ---Management (operations, maintenance, personnel)?
        --- Leadership?
        --- Mission requirements out of balance with resources?
        --- Everything is #1 priority?

5. Does the pace of the unit operations and mission requirements appear excessive or out of line with available resources?

    -- Crawl, walk, run concept appear sound?

6. From the medical doctor's perspective, are the soldiers healthy (mentally and physically)?

7. Are training programs in line with the unit mission?

    -- What is the unit's NVG training program?

8. Is the unit experiencing difficulties in meeting various currency requirements, i.e., NVG?

9. What has been the leadership turnover rate for the past year? (PCS, TDY, retire, etc.)

10. Does the unit have sufficient soldiers to man their equipment or are they forced to cross-level among units?

11. Are there sufficient mechanics in the unit?

12. What is the utilization rate for mechanics on a day-to-day basis?

APPENDIX R

WRECKAGE DISTRIBUTION DIAGRAM

1. The Wreckage Distribution Diagram depicts the location of all aircraft components in their postcrash positions. The locations should be shown relative to the flight path of the aircraft just prior to impact (Ref DA Pam 385-40). Diagramming of the crash site should begin as soon as possible after arrival at the accident site. No one should be allowed into the secured area until the locations of all components are accounted for and marked. Make sure that all parts or pieces are accounted for and diagrammed. The Wreckage Distribution Diagram is usually the responsibility of the Materiel Factors group leader. A sample checklist is contained on page 2-39 (Ref DA Pam 385-40). The board should consider using post or local engineer assets, when available to conduct a to-scale site survey.

2. The following pages are a sample checklist to follow for the Wreckage Distribution Diagram.

____ 1. Has arrangement been made for facility engineers to plot wreckage?

____ 2. Has the wreckage distribution plot been initiated?

____ 3. Does the wreckage distribution plot show location of all aircraft components in their postcrash position relative to the flight path of aircraft just prior to impact?

____ 4. Does the wreckage distribution plot show all terrain marks made by aircraft in the crash sequence; i.e., earth gouge depth, length and width, snow or earth pushed in front of the aircraft, etc.?

____ 5. Does the wreckage distribution plot show a plane and profile view?

____ 6. Does the wreckage distribution plot show rollover, nose over, or movement along crash path by curved arrows?

____ 7. Have all components, terrain marks, obstacles, witnesses, terrain features been surveyed to give distance and azimuth from the main wreckage?

____ 8. Does the wreckage distribution plot show the major impact of the aircraft?

____ 9. Does the wreckage distribution plot show the secondary impact(s) of the aircraft?

____ 10. Does the wreckage distribution plot show the location of eyewitnesses?

____ 11. Is the wreckage distribution plot complete and accurate?

____ 12. Have the locations of all occupants been determined?

____ 13. Has flight control and setting been determined and noted; i.e., controls, radios, autopilot, flaps, etc?

____ 14. Has the flight path been determined?

____ 15. Has flight altitude prior to accident descent been determined?

____ 16. Has flight attitude prior to accident descent been determined?

____ 17. Have the lateral and longitudinal attitudes at ground impact been determined?

____ 18. Has the speed at impact been determined? G-forces?

____ 19. Has the angle of impact been determined?

____ 20. Has the angle from obstacle to initial ground impact been determined?

____ 21. Has the distance of travel and of structural displacement from initial impact been accurately measured?

____ 22. Has the manner of flight (straight, cart-wheeling, etc.) after impact been determined?

APPENDIX S

STORAGE AND DESTRUCTION GUIDLINES

1. Purpose. To establish written guidance for the disposition of physical evidence gathered by the accident investigation board. Physical evidence includes witness interview audio tapes, written transcripts, laboratory reports, field technical reports, photos, slides, videotapes, negatives, hand written notes, copies of personnel and medical records, draft forms and records, etc. The board president/recorder will be responsible for the disposition of all documentation acquired during the course of the investigation.

2. Procedure.

a. Audio tapes or written transcripts of witness interviews: Transcriptions are not required and are done at the discretion of the board president. Audio tapes should be summarized as soon after the interview as practical. Tapes or transcripts should be secured until the formal report has been approved for distribution. Once the report is approved, erase the tapes and shred the transcripts.

b. Field technical reports, handwritten notes, personnel and medical records, etc.: All field notes, etc. will be turned over to the board recorder/president. All written notes/records not included in the formal report will be maintained by the board until the formal report has been reviewed and approved by the board convening authority. At this point, all these materials will be destroyed/shredded.

c. Pictures, slides, videotapes, other multimedia products: Pictures that are included in the report will be accompanied by the corresponding slides/negatives at a minimum. Negative strips will not be cut. Negatives will be retained on the left side of the report in a clasp envelope. All other multimedia materiel will be retained by the board until the report has been approved by the convening authority. At this point, all materials not needed for training purposes can be destroyed.

d. Prior to destruction of the materials accumulated during an accident investigation, the board must consider the possibility of litigation in the case. There are some cases where it will be prudent for the board to maintain all materials with the accident report. When in doubt refer questions to the Staff Judge

Advocate, U.S. Army Safety Center, DSN 558-2131, comm. (334) 255-2131.

APPENDIX T

FORMAT AND STRUCTURING OF FINDINGS AND RECOMMENDATIONS

(Reference: DA Pam 385-40)

1. General information. Findings and recommendations should follow a standard format. For aviation accidents, each cause-related finding reported in Block 1 of DA Form 2397-2R should be consistent with the coded summary of accident cause factors in Block 2. For ground accidents, cause-related findings reported in Tab C for the report should be consistent with the information in Block 46 of DA Form 285. In addition, each cause-related finding must be fully substantiated in paragraph 4, Analysis, of DA Form 2397-3R for aviation accidents and Tab D for ground accidents. Each present and contributing finding is reported in narrative format in two paragraphs and is prepared as a "stand alone" document. Only one task error or equipment failure/malfunction is recorded in a finding. Additional contributing errors or failed parts require additional findings.

a. The first paragraph of a finding answers the question "What happened?" The information is recorded in the indicated sequence.

(1) An explanation of when the error, materiel failure/malfunction, or environmental factor occurred in the context of the accident sequence of events; e.g., "During (preflight, takeoff, cruise flight, paradrop operations, convoy operations, etc.) ..." The condition should include enough specific information, such as airspeed, altitude, environmental conditions, roadway conditions, road speed, etc., to fully explain the condition.

(2) Identification of the individual involved by duty position; or the name and part number (PN) or national stock number (NSN) of the part, component, or system that failed/malfunctioned; or a description of the environmental factor if appropriate.

(3) Identification of the task error or identification of the failure mode of the part/component that failed/malfunctioned. Errors can be one of omission as well as commission; e.g., an individual failed to perform a required task or function rather than just performing it improperly. Include an explanation of how the task was either performed improperly or omitted, to include appropriate references. Refer to the list of task errors, materiel failure, and environmental conditions listed in Tables B-1, B-2, B-3 and B-4, Appendix B, DA Pam 385-40.

(4) An explanation of the consequences of the error, materiel failure/malfunction, or environmental condition. An error may directly result in damaging equipment or causing injury, or it may indirectly lead to the same result. Materiel failure/malfunctions may have an immediate effect on equipment or its

performance, or it may create circumstances that cause errors or make further damage inevitable.

b. The second paragraph of a present and contributing finding answers the question "Why did it happen?" Each reason for the specific task error or failure is recorded in this paragraph in narrative form.

(1) Identification of the reasons (system inadequacies) the error, materiel failure, or environmental condition that caused or contributed to the cause of the accident. Refer to the list of system inadequacies in Table B-5, Appendix B, DA Pam 385-40.

(2) A brief explanation of how each reason (system inadequacy) influenced the error, materiel failure/malfunction, or environmental factor.

2. Findings that document and report task errors.

a. The first paragraph of the finding begins with a brief description of the circumstances and conditions under which the task error occurred: "During a night, aided, tactical training flight at 200 feet AGL and 60 knots, ..."; "While conducting night convoy operations using blackout drive lights, ...".

b. The paragraph continues with an identification, using duty position, of the individual making the error, ... "the UH-60L pilot-in-command (PC) ..."; ..."the driver of the M998, High Mobility Multipurpose Wheel Vehicle (HMMWV) ...".

c. The paragraph continues with a simple statement of what the individual did wrong or failed to do (task error) that caused or directly contributed to the cause of the accident, ..." misjudged the clearance between the aircraft rotor and a tall tree." ..."exceeded the posted speed limit of 40 MPH by attempting to drive at 60 MPH." **NOTE: It is not necessary to use the key words listed in Tables B-1 and B-2 of Appendix B, DA Pam 385-40, but the words used to indicated the specific task error should easily identify a specific task error in the tables. Again, remember, only one task error per finding.**

d. The next element is a short statement of the result of the error. "As a result, part of the rotor system departed the aircraft subsequent to hitting a tall hardwood tree. Aircraft control was lost and the aircraft descended through the trees to ground impact. The aircraft was extensively damaged and the three occupants received minor injuries." "The M998 departed the roadway in a right curve with the excessive speed and overturned. The vehicle was extensively damaged, and the unrestrained driver and the senior occupant were ejected and seriously injured."

e. Document the system inadequacies in the second paragraph. In documenting the system inadequacies, refer to Table B-5, Appendix B, DA Pam 385-40. "The PC's actions were a result of fatigue and improper division of attention. That is, he was not mentally alert in that he had been on continuous duty for over 20 hours, of which 11 were conducting flight operations. Additionally, he was extremely busy coordinating supporting ground forces, requesting and directing fire support, providing intelligence updates, and flying his aircraft." "The driver's actions were a result of a lack of self-discipline and improper supervision by the senior occupant. The driver had a history of speeding. He had been cited for speeding in his POV at least twice within the past two weeks, and he had been given an official counsel statement by his immediate supervisor for speeding in an M998 only two days prior to the accident. Additionally, the senior occupant took no on-the-spot corrections for the speeding." **NOTE: In these samples, there are at least two answers to the question "Why did it happen?" Record as many reasons (system inadequacies) as noted in the Analysis paragraph of the Narrative.**

f. Immediately following the second paragraph of the finding, the recommendations are recorded. The recommendations answer the question, "What to do about it?" Refer to Table B-6, Appendix B, DA Pam 385-40, for completion of the recommendations. The recommendations must be aimed at the system inadequacies recorded in the second paragraph of the finding, not the task error in the first paragraph. The recommendations are addressed to unit level (company, troop, battalion), higher level (brigade, division, corps) and Army level (MACOM). The recommendations should require the "Commander, _____," take or initiate some action that will result in the desired change(s); e.g.,

RECOMMENDATION (1, 2, 3, etc.):

a. Unit Level Action: Commander, _____ (unit):

(1) Emphasize to unit aviation personnel the importance of proper rest on crew performance.

(2) Establish and enforce a viable crew rest policy that complies with the requirements in AR 95-1.

b. Higher Level Action: None.

c. Army Level Action: Commander, U.S. Army Training and Doctrine Command, assess and manage flight crew task overloading during tactical and tactical training operations.

3. Materiel failure/malfunction findings.

a. A finding for an accident where a materiel failure or malfunction caused or contributed to the cause of the accident is recorded the same as for a task error finding. Again refer to Tables B-1 through B-6, Appendix B, DA Pam 385-40. The first paragraph begins with the condition, "During a day terrain flight at 50 feet AGL altitude and 60 knots," and continues with the identification of the part or system that malfunctioned or failed as "the UH-60 engine power turbine governor assembly, PN 2524919-3, SN 33368H, malfunctioned." Next, in the same paragraph is a short qualification of the malfunction. "Corrosion had built up on the control arm shaft, binding the assembly."

b. Continuing in the first paragraph is the result which completes the question "What happened?" "The PC was forced to execute an emergency landing, but due to the altitude and airspeed at the onset of the emergency, he was not able to negotiate to a suitable landing area. The aircraft descended through 30-foot-tall trees to ground impact. The aircraft was extensively damaged, but none of the occupants received injury."

c. The next paragraph documents the cause for the materiel failure/malfunction. "The corrosion on the control arm shaft was allowed due to a lack of inspection criteria for the assembly. The assembly is not included in any inspection criteria for user-level inspections."

d. The recommendations are addressed following the two paragraphs of the finding. Again, they are addressed to all three levels of command.

RECOMMENDATION (1, 2, 3, etc.):

(1) Unit Level Action: None.

(2) Higher Level Action: None.

(3) Army Level Action: Commander, U.S. Army Materiel Command:

(a) As an interim measure, develop inspection criteria for user-level use to determine continued serviceability of control arm shafts in _____ engines.

(b) Redesign the governor assembly on the _____ engines to preclude corrosion buildup.

4. Present and contributing to the (severity of injury) or (accident damages) and present but not contributing findings. These findings follow a single-paragraph format.

Findings that did not cause or contribute to the cause of the accident but contributed to the severity of injury or accident damage are recorded secondary to the present and contributing findings. Present but not contributing findings are findings that did not cause or contribute to the cause of the accident. They are recorded to inform the command of problems that, if not corrected, could adversely affect the safety of future operations. They are recorded after all the first two types. Both are recorded in single-paragraph format without system inadequacies. For present but not contributing findings, individuals are not implicated. Sample present and contributing to the severity of injury and present but not contributing findings with recommendations are:

FINDING (2, 3, 4, etc.) (Present and Contributing to the Severity of Injury): **Note: you must have a present and contributing finding first.**

The M923 driver and the senior occupant were not using the installed seat belts in contravention of the requirements of AR 385-55. They received serious injury as they were ejected in the accident sequence. The Board determined that had they used the available seat belts, their injuries would have been significantly reduced, in not eliminated.

RECOMMENDATION (2, 3, 4, etc.):

a. Unit Level Action: Commander, Company __, __ Battalion, __ Division, enforce the seat belt requirement in AR 385-55.

b. Higher Level Action: None.

c. Army Level Action: Commander, U.S. Army Materiel Command, produce a plastic sticker to be placed in the cab or driver's compartment of all military vehicles with installed seat belts to remind the drivers and passengers that use of the seat belts is mandatory.

FINDING (3, 4, 5, etc.) (Present but not Contributing):

The unit was planning to conduct slingload operations that would not have been in accordance with the requirements in FM 55-450-1 and FM 10-450-3. In addition to inadequate sling load training for the flight crew, a steel, fixed, "doughnut" design cable was to be used as the sling for the mission. The steel cable had not been load-tested for use, and it had not been approved for the use. Also, indications were that appropriate protective equipment, such as gloves, headgear, and a static probe, were not provided ground support personnel for the operation.

RECOMMENDATION (3, 4, 5, etc.):

a. Unit Level Action: Commander, Company __, __ Battalion, __ Division, validate the aircrew training requirements and operating procedures for slingload operations.

b. Higher Level Action: None.

c. Army Level Action: None.

APPENDIX U

AUTHORIZED COLLATERAL BOARD INFORMATION

1. Reference AR 385-95:

a. The Collateral Board's investigation is secondary to the accident investigation. Collateral board members will not interfere with the accident investigation at any time.

b. Witnesses may not appear before a Collateral Board until they have been released by the Accident Investigation Board

2. The following information may be provided the Collateral Investigation Board.

a. All information contained on the left side which includes all factual data but is not limited to the following items:

(1) Photographs
(2) Teardown and analysis
(3) Fuel and oil analysis
(4) ECOD
(5) Maintenance records
(6) Flight plans
(7) Medical records
(8) Accident reports
(9) Autopsy reports
(10) Weather reports

b. Information that will not be given the Collateral board is:

(1) Witness statements
(2) Findings and recommendations
(3) Any other analysis or assumptions derived at by the Accident Investigation Board.

APPENDIX V

EVALUATING RISK MANAGEMENT

1. General. As part of the accident investigation, the risk management process within the command must be evaluated. Here are some simple guidelines when investigating risk management principles.

a. First look at the pre-mission risk assessment:

(1) Were all the obvious hazards identified or was it a "pencil whipped, pre-printed form?

(2) Was the crew/operator aware of the risk assessment and of the controls imposed by the briefer/approver?

(3) Were the controls appropriate for the mission/operator/equipment to be used.

(4) Was the operation supervised, and was the supervisor aware of the hazards and controls?

b. When an accident occurs and is attributed to human factors (someone either failed to take appropriate action or took inappropriate action) you can generally track the cause to a failure in risk management or lack of military or self-discipline. When evaluating how risk management failed, consider the following:

(1) When conditions changed during the mission, were the hazards and associated risks reassessed and additional controls considered and implemented? Typically, we hear, "The commander, platoon leader, etc., did the risk management before the mission." It is generally not understood that the risk management concept is a fluid and evolving process.

(2) Did the personnel performing the mission adhere to the controls or ignore them? As an example, a unit's SOP requires a ceiling of 500 feet with a minimum of 2-mile visibility for night, unaided flight. When the flight encountered weather less than that, did they descend and continue, hoping to clear it; did they turn around? What is the general feeling within the unit on this issue? For ground operations, did the SOP specify a specific personnel mix, speed, load, etc., and was it briefed, enforced, and followed? A

standard not briefed or enforced is a failure at the leader level. A standard briefed but not followed is an individual discipline failure.

(3) Talk with the junior leadership (LT, SGT, SPC). Do they understand the concept of risk management and do they understand they are responsible as supervisors for performing risk management for every task they do or supervise? Most junior soldiers do not understand risk management as a process which they should perform on a daily basis; whether they drive their cars, drive military vehicles, fly aircraft, or conduct range operations. The risk management process is more obvious for some operations than others.

(4) It has been noted in previous accident investigations that commanders generally perform adequate written assessments of the hazards and associated risks prior to conducting operations (usually to meet regulatory requirements). Also, appropriate controls are usually implemented, such as pre-qualification training, drownproofing, driver's training, setting speed limits, etc. The problem is, that the assessments lose effectiveness at that point, often being "filed away" until the accident board arrives, and the risk management process stops. Generally the established controls are not thoroughly followed because they were either unknown, inconvenient, or time ran out and they just didn't have time to do the identified training or pre-qualification; and supervisors did not ensure that the controls were followed.